

Pilot Shortage Task Group Report

January 22, 2019

Introduction

Since the earliest days of flight, Michigan has played a leadership role in aviation. From the first paved runway in the world to the first mass-produced all metal airliner, Michigan has led the way in pioneering aviation achievements and the development of this critical mode of travel. Aviation is now an integral part of our transportation system, moving people and goods throughout the world. Michigan is home to a vibrant and diverse aviation community made up of commercial airlines, business aviation and recreational flyers – each sector of which relies heavily on a group of highly-skilled, properly trained aviation professionals to grow an aviation system which accounts for an economic impact of nearly \$22 billion in Michigan alone.

However, recent industry shifts including regulatory changes, aircraft fleet changes, retirements, and attrition are highlighting a significant concern for the aviation industry – a looming shortage of aviation professionals. Boeing’s most recent 2018-2037 pilot outlook claims that North America alone will require 206,000 new pilots of a world demand of 790,000.¹ They also estimate nearly 120,000 new maintenance technicians will be needed in North America over the next two decades.

To begin to address this problem within Michigan, Aeronautics Commission Chairman J. David VanderVeen (now immediate past chair) convened the Pilot Shortage Task Group in May of 2018. The Task Group was charged with providing initial recommendations to the Michigan Aeronautics Commission (MAC) by January 2019 on ways the state can address these shortage issues. To achieve this goal, the Task Group met in Lansing, Michigan, on June 28, August 23, and December 18, 2018. This report addresses the initial directive with the understanding that additional contributions from the Task Group may be solicited, as implementation and industry changes necessitate.

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¹ <https://www.boeing.com/commercial/market/pilot-technician-outlook/2018-pilot-outlook/>

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Task Group Survey and Response

To fully understand the national and statewide impact of the pilot shortage, the MAC solicited feedback from Task Group meetings on a variety of questions including:

How has the pilot shortage impacted your organization or company?

Mead & Hunt – The organization has found it difficult to hire staff who has specific airport engineering and planning experience since it is a very limited area of study for most institutions. Mead & Hunt's research with ACRP 01-34 has uncovered a considerable amount of disconnect between aviation education related items that do not support a continuous option for students to be engaged in aviation.

Crosswinds Aviation – The pilot shortage has had a positive impact on their business. The shortage has caused airlines to increase pay and produce a much brighter future for high school students looking at becoming a pilot as a career. Although the cost of entry is quite high, it is now a career option that makes sense for young people.

Western Michigan University (WMU) College of Aviation – Flight instructor staffing is a blend of full and part-time employees within the WMU operation. Their full-time flight instructors are provided a competitive salary and benefit package, and WMU has not experienced any

turnover amongst this employee group in several years. Including management pilots, WMU has 10 full-time employees who are directly associated with flight training activities and an 11th individual who spends about one half of his time dedicated to flight training. Complementing the full-time faculty/staff are approximately 60 part-time flight instructors. This number fluctuates depending on how many individuals they can hire at any given time and what the turnover rate is amongst them. Looking at data (compiled earlier in 2018) between January 2016 and March 2018, the college lost 62 part-time Certified Flight Instructors (CFIs) to other employers; most [but certainly not all] moves were vertical in nature to higher level operators, such as the regional airlines. During the same time, the college hired 65 CFIs and would have hired more if they were available. This rate of turnover is high, but it is by no means the highest the college experienced. At one point, the college had a near 100 percent turnover rate during a one-year period.

While employee turnover is a costly problem in any organization, it is particularly complicated in the flight training arena where it is not a simple matter of just inserting a new instructor into the seat next to a student. Due to the personalized nature of instruction, it is not uncommon for students to experience setbacks in progress when an instructor change takes place. There are exceptions, but instructor changes are costly from not only a financial standpoint for the student, but for the operator who is providing training and standardization to the new employee. Furthermore, the lack of depth available in the instructional ranks has made it more difficult to find experienced and qualified individuals for teaching multi-engine instruction, conducting stage and progress checks and teaching the next generation of flight instructors. To teach a CFI, per Federal Aviation Regulations, the recommending instructor must have two years of experience as a CFI themselves. Finding individuals remaining in instructional jobs with two years of experience is challenging. WMU is not alone with these difficulties. Based on information provided by the University of North Dakota (UND), they are about 20 percent short of the instructors needed to run their flight operation and are also experiencing difficulty in retaining instructors who have experience.

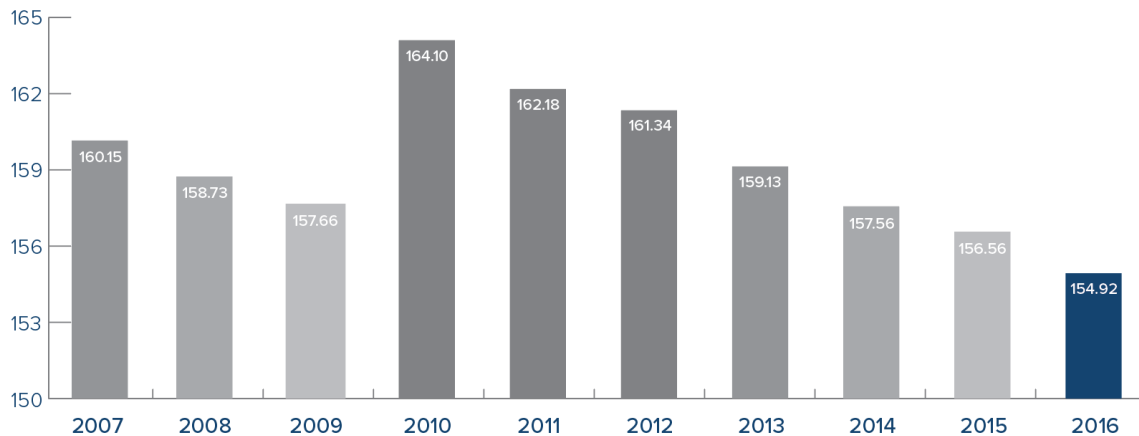
Overlaid against the instructor shortage is a renewed interest by students interested in becoming pilots. Data compiled by UND notes that several of the major collegiate institutions offering flight training are experiencing significant increases in student applications. The numbers are reflected as follows:

- University of North Dakota – 35% rise
- Auburn University – 30% rise
- Western Michigan University – 25% rise
- Embry Riddle Aeronautical University – 20% rise
- Middle Tennessee State University – 19% rise

The critical shortage of qualified instructors combined with the increased application numbers for flight students is creating a challenging environment in which to operate. The crux of the difficulty lies with the lack of instructional staff to teach those students who want to learn to fly.

Regional Airline Association – The pilot shortage has led to a broad scale contraction in the regional airline industry.

Passengers Enplaned (Millions)



A large percentage of airline pilots face mandatory retirement at age 65 (14 C.F.R. §121.383) in the next 10 years. One [study](#) forecasts 36 percent of the workforce will retire by 2026; [another](#) estimates 42 percent. [Studies](#) also forecast industry fleet growth in response to growing air service demand, fleet size will likely [double](#) in 20 years, requiring more pilots. At the same time, the pilot pipeline has been shrinking. Between 1990-2017 [FAA](#) has issued 52 percent fewer total pilot certificates with all certificate types declining. By 2020, the aviation system is forecasted to be short 3,000 pilots. By 2026, the industry is forecasted to be short 14,000 pilots. With approximately 10 pilots needed to crew every regional aircraft, these shortfalls equate to 300 and 1,400 aircraft grounded. For perspective, the entire regional airline industry operates just around 2,000 aircraft today.

The majority (64 percent) of US commercial airports have too few passengers to support air service by major airlines and are served exclusively by regional airlines. Because regional airlines are the entry point of the career path, the industry has been first and hardest hit, and the communities relying on regional airlines exclusively have been faced with disproportionate early impacts. While pilot retirements have not yet peaked, they are outpacing the supply of new pilots by a large factor. As a result, the regional airline industry has contracted. This contraction has taken place during a period of economic expansion, where communities would typically enjoy increased air service. Instead, communities are losing service. Between 2013 and 2017, 20 airports have lost all their air service, 26 airports have lost at least 75 percent of their air service, 65 airports have lost at least 50 percent of their air service, 107 airports have lost at least 33 percent of their air service, 174 airports have lost at least 20 percent of their service, and 256 airports have lost at least 10 percent of their air service. This is sharply worsening the disparity between urban and rural transportation options and contributing to the troubling trend of urbanization of US GDP.

These losses stand to worsen as the shortage deepens, and the impacts will spread to larger communities and larger airlines. Regional airlines also serve larger markets, where the use of smaller aircraft can allow more frequency between markets and increase competition in a market – this means regional airlines help bring lower fares and better travel options to businesses and families in bigger cities, too. Without intervention, communities of all sizes will lose significant measures of connectivity – in terms of destination options and frequency. Many more communities will lose air service altogether or see greatly diminished options.

Are there immediate state-level policies you believe should be enacted to address critical concerns in the short term?

Mead & Hunt – Being interested in the broader context, not just the pilot shortage, there should be funds dedicated, if feasible, to provide education opportunities across the state. Restoring the teachers’ aviation education workshop might be an example, a scholarship program, a dedicated education coordinator, connections for flight training and camps may be options.

Crosswinds Aviation – The two biggest challenges Crosswinds Aviation faces are: (1) Access to financing for pilot training. One of the only viable mechanisms for access to the financing needed to achieve ratings up to CFI are through student aid at collegiate aviation programs. This severely hinders student pilots at small flight schools to obtain the financing required to get up to the CFI rating. (2) There are not enough professional flight training operations to fill the need, even if there were enough interested students and financing was not an issue.

Michigan Talent Investment Agency – On the state level, look at all required licensure as to whether it can be changed or streamlined.

Western Michigan University (WMU) College of Aviation – Not knowing exactly how the state and federal levels communicate, one item that is critical to WMU’s operation in retaining instructors is keeping the current federal regulations in place, which require at least 1500 hours (1000 hours for a graduate of WMU’s flight program) for the issuance of a Restricted Airline Transport Pilot certificate (R-ATP). If these minima are reduced to allow the issuance of the R-ATP with less than the hours noted above, it will further deplete the current staff of instructors, as they will be hired by the part 121 carriers with less experience; and therefore, leave flight training organizations with fewer employees available to train the next generation of pilots. Accordingly, if there is an opportunity for the state to support not changing the existing federal regulations, that will help in the long run.

Regional Airline Association – Local policymakers, including mayors and city/county officials, governors and others, should communicate formally with the Michigan delegation in Washington. We need direct involvement from Michigan’s Congressional Delegation, community development leaders, state and local elected officials and airports. Michigan’s economy demands a strong commercial aviation system. Lawmakers must be urged to address the shortage as well as the related issue of skills degradation among newly qualified pilot

candidates, by urging Federal Aviation Administration (FAA) expansion of pilot training pathways – this does not require a change in the law.

In 2013, FAA implemented the new First Officer Qualifications (FOQ) Rule, which was spurred by Congress through the Airline Safety and FAA Extension Act of 2010 (P.L. 111-216 §217), requiring all part 121 pilots to hold an Air Transport Certificate, with a prerequisite of 1500 hours, or a Restricted ATP (R-ATP), with portions of the prerequisite hours offset by structured training credit. The Rule increased the time and cost associated with pilot training. R-ATP pathways are underutilized, with only three approved at present despite their proven safety advantages and benefit to pilot supply. Airline-sponsored R-ATP pathways can incorporate enhanced training, improving training while expanding the pilot pipeline and relieving pressure on other pathways. To date, FAA has approved only three types of structured training pathways, despite their proven safety advantages. Additional civilian-based pathways would broaden the pilot supply and alleviate pressure on all sectors but would also offer more pilots the opportunity to gain the best training opportunities. It is not enough simply to draw more pilots into the pathway, but we must ensure more pilots have the right training opportunities to ensure they can be successful.

Are there long-term opportunities to provide a stable pilot ecosystem for Michigan specifically?

Mead & Hunt – As it relates specifically to pilots, there is a need to connect former pilots with training opportunities to educate the next generation. The costs associated with a traditional four-year degree and then the required flight time prior to entering a regional carrier, makes it difficult to afford. We have heard time and time again that it is often cost prohibitive to get to the point to support the regional and mainline carriers.

Crosswinds Aviation – Speaking from our experience, we are working on starting a flight school in Flint and are having difficulty with funding hangar improvements required for a flight school with associated high school and college programs. It is important longer term for the state to be thinking about facilities at key airports throughout the state where flight schools could be attracted to open.

Michigan Talent Investment Agency – A long-term strategy would be to adopt a career exploration program while students are in middle school and high school, similar to MiCareerQuest – <https://www.micareerquest.org/> or become part of and or have a similar program to the “Forces to Flyers” program to drive returning veterans into the state for pilot training – <https://www.transportation.gov/briefing-room/forces-flyers>.

Western Michigan University (WMU) College of Aviation – This is a multi-faceted issue. First, the business climate in this state must remain such that it attracts and retains business which can afford corporate airplanes. Beyond corporate aviation, it is critical for the state to support the various charter (cargo and passenger) operations and continue to solicit a presence from the regional and major airlines. The above obviously has many positive economic aspects; but from a flying perspective (if there are flying jobs available in Michigan), pilots will follow. Also, looking

at the front end of the aviation business (if there are jobs available for pilots), it is believed that there needs to be enough flight training providers available to support some of these positions. Over the course of the past couple of decades, the flight training business has proven to be challenging, and there appear to be far fewer providers of flight training now than there were 20 years ago. The bottom line here is that to support aviation, the state must continue to support business and perhaps offer targeted incentives for aviation-related businesses to provide a path from flight training to stable employment through to retirement. How this can be accomplished is perhaps a question to be answered by a larger audience.

Regional Airline Association – Tuition for flight training and education is incredibly expensive and most students lack access to private capital needed to access the career path. As stated before, FAA should approve structured training pathways offered by certificated air carriers for credit toward a R-ATP certificate in cases where they *enhance safety*. In the meantime, public private partnerships, particularly those centered on financial avenues to support pilot training like loan forgiveness programs, state grants, or tax incentives for employer-based loan forgiveness or tuition assistance programs, will help incrementally. These policies should be mirrored on a national level as well.

Themes Identified Throughout Meetings

Each meeting of the pilot shortage task group followed a similar agenda where real time impacts of the pilot and maintenance technician shortage were described by members of the Task Group. Building upon real time impacts, discussion was guided toward actionable items the Michigan Aeronautics Commission and state agencies overall could undertake to support job growth and retention initiatives for these careers within Michigan.

Several themes of discussion emerged during the Task Group's deliberations including:

- Recognition that recent regulatory changes, such as increases in overall pilot hour requirements and training standards have impacted every segment of the industry.
- While awareness of the pilot shortage issue has gained national attention, awareness within economic development and talent development agencies within Michigan is limited.
- Many associations and industry leaders are conducting siloed pilot growth and retention initiatives aimed at addressing the shortage from a national perspective. Concurrently, many state pilot training organizations have developed business strategies to strengthen the aviation industry locally. A gap exists between national and local efforts that may be filled by a statewide coalition.
- Some lesser known issues are beginning to surface in the general aviation training environment, such as lack of available new or used aircraft for training and limited financing available for training.
- Federal and state airport development programs provide limited support to capital investments needed to support pilot training facilities.

Task Group Recommendations

Building upon the themes identified at previous meetings, the Task Group sought to solidify an initial grouping of recommendations aimed at initiating a robust discussion beyond solely the Task Group members and setting the stage for a sustained effort to primarily address the pilot shortage in Michigan. This was done with full acknowledgement that shortages of maintenance and avionics technicians will also be a challenge in the years ahead. These preliminary recommendations identify only an initial effort; a starting point if you will, and the Task Group recognizes much additional coordination, discussion, and action will be necessary as the issues surrounding not only a pilot shortage, but overall aviation professional shortage – including pilots, maintenance professionals, cabin staff, and others – grows in severity within Michigan.

1. **Develop a greater understanding of the aviation professional shortage within all levels of state government – including the Michigan Economic Development Corporation and the Michigan Department of Education.** The task group noted the Michigan Economic Development Corporation (MEDC) and the Michigan Department of Education (MDE) excel at their respective missions – which traditionally have a limited nexus with aviation issues. The task group believes a deeper relationship between the Commission and MEDC and MDE respective has the potential to gain significant achievements on behalf of the aviation industry overall.
2. **Encourage a collaborative environment for all aviation organizations and interests to speak with one voice on pilot shortage issues within Michigan.** This recommendation can focus on the establishment of a Talent Consortium able to be utilized during participation in the Marshall Plan for Talent. Such a group should serve as a collaboration of stakeholders from industry, education, and community organizations that come together in a partnership to identify specific talent gaps and develop innovative solutions to close identified talent gaps.
3. **Encourage the aviation community to pursue participation in the Michigan Marshall Plan for Talent Program.** The Marshall Plan for Talent is a program that plans to invest \$100 million to create, expand and support educators and businesses who create innovative programs for high-demand, high-wage careers. The program's key objectives include fostering business and education collaboration, increasing competency-based learning, increasing the number of individuals with credentials needed to secure high-demand, high-wage jobs, and increasing workforce planning, career awareness, and career exploration.
4. **Encourage the aviation industry's participation in Michigan workforce development initiatives such as MICareerQuest.** During a MICareerQuest event, students rotate through exhibit hall area quadrants highlighting multiple high-demand industries including advanced manufacturing, construction, high science, and information technology. Students participating in the program engage with professionals and participate in activities that showcase various high-growth occupations, opening their eyes to opportunities for great careers. This hands-on event has yet to be explored by a concerted aviation industry effort and appears to be an excellent opportunity to develop awareness of the potential of aviation careers.

5. **Support and expand active pilot development programs.** With multiple strong existing pilot and aviation professional development programs already in place, the Task Group supports new and innovative policies to support these existing programs in a variety of ways – including the exploration of grant programs focused on supporting capital development of infrastructure needed to grow a robust aviation training facility, pilot training initiatives, and other programs.
6. **Pursue opportunities identified through the Aviation Maintenance Workforce Development Pilot Program.** Under the Federal Aviation Administration Reauthorization Act of 2018, \$5 million per year would be allocated to the pilot program nationally, which would provide grants of up to \$500,000 to support workforce development initiatives including scholarship programs, student outreach, transitioning veterans to new careers, and enhancing aviation technical education.
7. **Support modernization of FAR Part 147.** These regulations govern the training curriculum and certification of aircraft maintenance technicians. Current requirements are devoted primarily to the “three building blocks” of maintenance training – general overview, airframe and powerplant. It is proposed that some hours be shifted to advanced avionics and composites training as well.

Next Steps

The Pilot Shortage Task Group was assembled by the Michigan Aeronautics Commission to provide an initial assessment of the impact of the pilot shortage within our state. Throughout the deliberations of the group, the individual experiences and expertise has raised a number of short- and long-term areas of discussion for not only the pilot shortage specifically, but for aviation professionals – pilots, crew members, maintenance professionals, and others – alike. This report marks the beginning of the analysis and implementation of the initial recommendations and will feed future study, discussion and reporting to address this important issue.